SPECIAL REPORT: DEC's Ambitious Software Strategy *page 66*

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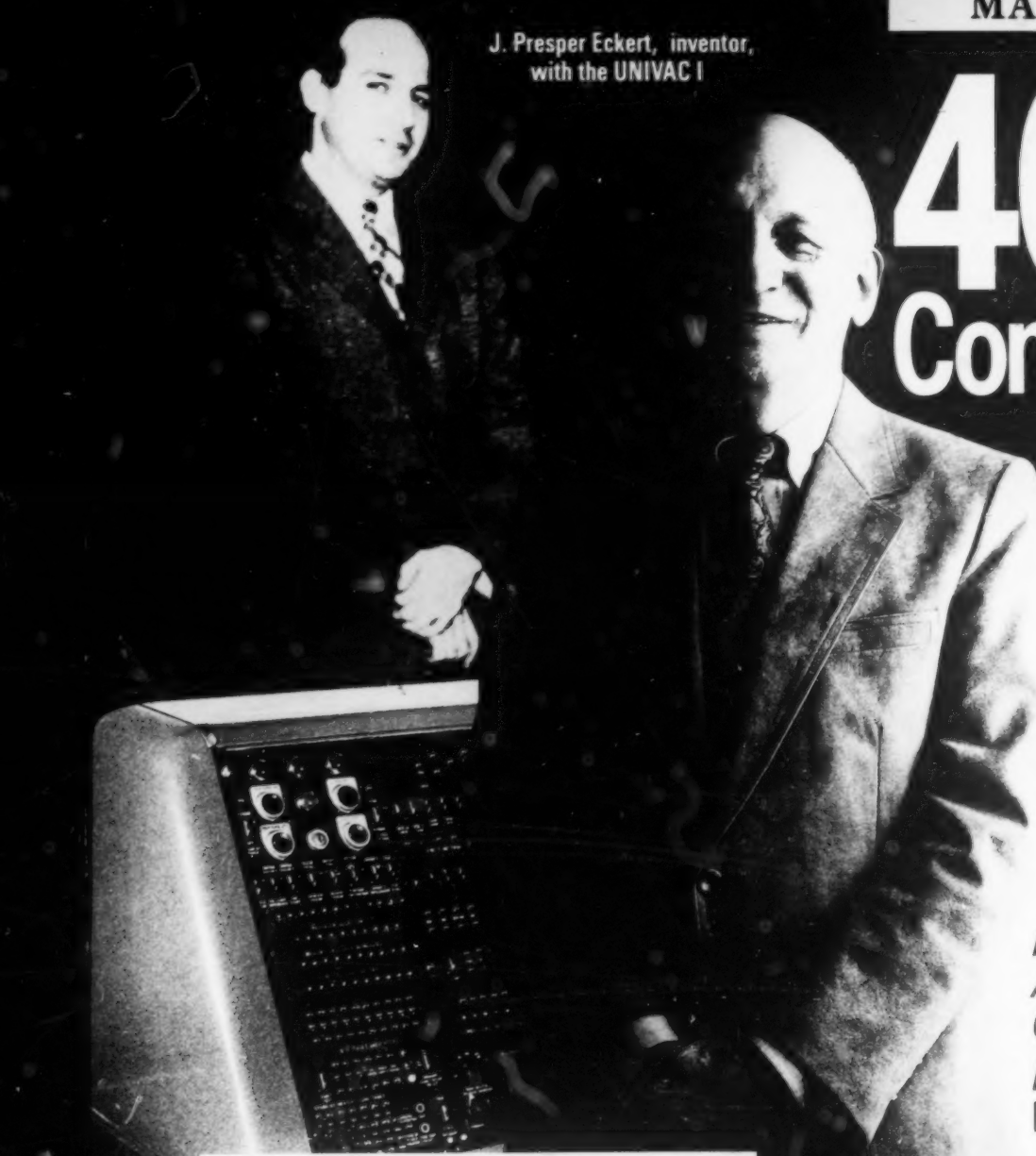
DATAMATION®

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

MARCH 15, 1991



J. Presper Eckert, inventor, with the UNIVAC I

40 Years Of Computing

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A Retrospective With:

Carl Reynolds,
Gordon Bell, Gene Amdahl,
Thomas Watson Jr.,
Fred Brooks, John Opel,
Robert Metcalfe,
Dan Bricklin, Rod Canion,
Alan Kay, John Armstrong,
Bernardo Huberman
and others

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page 97

CASE Software

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MARCH 15, 1991

DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

VOLUME 37
NUMBER 6

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BY DAVID R. BROUSELL
An interview with Dr. J. Presper Eckert, the coinventor of the UNIVAC I and the world's first electronic digital computer.

Cover shows Eckert in the late 1940s and today; photography by Eugene Mopsik.

Where it all began: Eckert outside U. of Penn.'s Moore School.

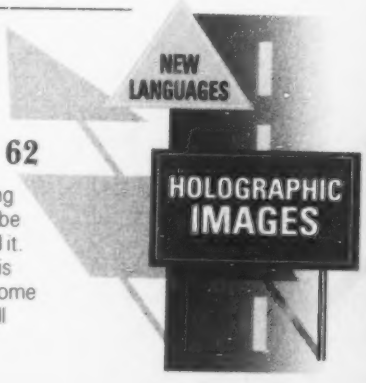
40 Years On The Frontier 34

BY LINDA RUNYAN Fasten your seat belts, and hang on tight. You're about to take a trip through 40 years of commercial computing. In this special section, DATAMATION celebrates the people and the technologies that created one of the world's most dynamic industries. It all started with the shipment of Remington Rand Inc.'s UNIVAC I to the U.S. Census Bureau 40 years ago this month.

Trivia Contest 59

BY ANDREA OVANS AND CHRIS STAITI After spending weeks in our dusty, ill-lit storerooms poring over back issues of DATAMATION, we have come up with what we believe are a baker's dozen of the most formidably trivial questions we could find, three for each decade.

40 YEARS OF COMPUTING



Miles To Go 62

BY JEFF MOAD What will be coming up in the next decade and beyond may be even more exciting than what preceded it. If that's not completely certain, what is is that the technological innovations will come at a faster pace than ever before and will affect larger numbers of people and organizations.

SPECIAL REPORT

CORPORATE PROFILE

DEC's Ambitious Software Strategy 66

BY TED BUNKER In an attempt to become every MIS professional's essential provider of interoperability glue, Digital is overhauling its Network Application Support services, operating systems and pricing strategies.

Digital's Stone revamps software line.

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RISC WORKSTATIONS

IBM's RS/6000: A 12-Month Checkup 73

BY BOB FRANCIS One year after the RS/6000 introduction, it's clear that Big Blue has finally scored big in workstations. But mixed signals regarding product positioning and SAA compatibility have some users confused.

Delta Metals's Cross wants to grow with the RS/6000.

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BY BOB FRANCIS Portable NetWare lets Novell clients access applications on a variety of midrange machines from proprietary minis to UNIX-based RISC screamers.

Evans & Sutherland practices a smorgasbord style of computing.

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BY MIKE RICCIUTI Sony's NEWS 3250 laptop offers UNIX users what the DOS world has had for years—a portable workstation. But business users may not be ready for it.

Sony's Foden hopes business and technical users will hit the road with the NEWS 3250 laptop.

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Have Mouse, Will Travel

Software
Track Your Software Changes

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Bridging The Route

PCs & Workstations
Cicero Meets Excel

Systems
DEC Adds Low-End VAX 4000

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A Novell Use For Minis

Portable NetWare lets Novell clients access applications on a variety of midrange machines from proprietary minis to UNIX-based RISC screamers.

BY BOB FRANCIS

Network planners and managers have recently been the objects of an escalating war between network software vendors. The battle has focused on the right approach to the sitewide and organizationwide networks just beginning to leave the drawing boards.

But many companies' needs are less comprehensive. They want networking software that gives LAN users access to existing minicomputer applications now, without having to implement a lot of new technology.

For such users, LAN software leader Novell Inc. of Provo, Utah, has developed Portable NetWare. It's a C version of the basic NetWare kernel that runs on a variety of midrange systems, including Data General AOS/VS, Hewlett-Packard MPE, Wang VS and UNIX machines. Portable NetWare sits on top of the minicomputer's operating system and enables PC and Macintosh users on a NetWare LAN to access files and peripherals on the host system. As an added benefit, it works with the various NetWare shells, which means foreign systems appear much like the LAN users' native systems.

Novell developed the product to some extent as a challenge to Banyan Systems Inc.'s VINES and Microsoft Corp.'s LAN Manager networking software, according to Michael Millikin, an analyst at Patricia Seybold's Office Computing Group in Boston.

Portable NetWare's UNIX implementation, in particular, will be useful in thwarting Banyan's UNIX-based VINES network operating system. "It's probably not the perfect solution in every case," says Millikin. "But it offers a good, relatively simple way to connect those Novell users to the rest of the corporation."

However, Novell has so far failed to garner support for Portable NetWare from some of the industry's heavy hitters, Millikin says. IBM, for example, has not jumped on the Portable NetWare bandwagon for either the AS/400 minicomputer or the RS/6000 UNIX workstation line, although both are widely expected. Big Blue says NetWare interoperability is an important goal for the AS/400, but would not disclose the path it is taking toward that goal.

NCR Corp., however, has expanded its effort with Portable NetWare. The company is already shipping a version of Portable NetWare for its Motorola-based Tower systems, and it will also unveil a UNIX version of NetWare to run on its System 3000 processor, powered by Intel Corp.'s 80386 and 80486 chips.

So far, 12 companies have opted to become NetWare partners with Novell (see chart, "Who's On The Portable NetWare Bandwagon"). These firms do the porting of NetWare to their systems, and Novell certifies them. The systems companies then sell and service the product through their marketing channels.

Sales have not been very exciting, however. Lee Doyle, LAN research manager at consulting firm International Data Corp. in Framingham, Mass., estimates that only a few hundred Portable NetWare licenses have been sold so far. Doyle says Portable NetWare's attraction is more as an integration package than a broad extension of Novell networks across midrange systems.

Just because Portable NetWare provides some degree of integration doesn't necessarily make it the best solution, says David T. Dunagan, president of Strategic Support Systems Inc., a Dallas-based computer consulting and support company. He believes that many companies would be better off rewriting applications to work in a multivendor environment, rather than finding glue to stick them together.

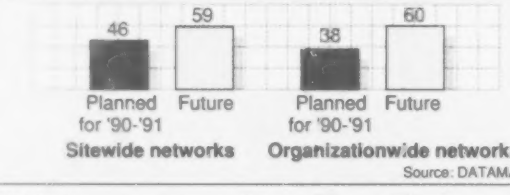
Nonetheless, Dunagan sees Portable NetWare as a good interim solution to getting disparate operating systems to talk to each other. "We've seen some interest in that with some UNIX environments," Dunagan says.

Still, Dunagan points to a good news/

Networks Growing More Extensive

Portable NetWare may fit into the plans of the many IS departments building links between systems and applications throughout organizations.

PERCENTAGE PLANNING TO IMPLEMENT NETWORKS

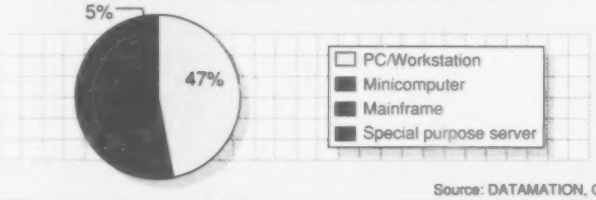


Source: DATAMATION, Cowen & Co.

Minicomputers Continue To Serve

Minis rank as the second most-used machines for network servers.

SYSTEM HARDWARE USED AS NETWORK SERVER



Source: DATAMATION, Cowen & Co.

bad news quality of using Portable NetWare with higher performance computers. "If you're looking at it from the RISC environment, you've got to think that performance is pretty important. If Portable NetWare slows that down, it may not prove to be effective. I can see it for a single application or two, but as an operating system for itself, I don't see it," Dunagan says.

Serving Up Applications

Portable NetWare can be beneficial for companies that practice a smorgasbord style of computing, says Eric Bozich, systems analyst at Evans & Sutherland Computer Corp., a Salt Lake City producer of high-end graphics workstations and simulation software. His company uses a prerelease version of Interactive Systems Corp.'s implementation of Portable NetWare for 386- and 486-based UNIX systems.

> ☐ **WE'VE TRIED OTHER METHODS. BUT THEY HAVEN'T WORKED AS WELL.**

"It's a product we've needed for a long time. It's not without its shortcomings, but it provides a real pivotal connectivity point for us within our organization and our goals. So it works very well for us," Bozich explains.

Evans & Sutherland has practiced a smorgasbord style of computing for some time, Bozich says. "We've allowed our people to use the desktop machine of their choice, be it a Macintosh, a PC or a UNIX-based workstation. Of course, depending on what their application is, what their job description is, we may try to give them a little indication of what platform they may want to look at first, but if somebody's comfortable with a Macintosh even though everybody around him has a PC, that's OK. And the various departments have their own mission-critical applications that are running on VAXs and UNIX machines on our network. So we had to provide some way for the end users of the data to get to that," he says.

Bozich agrees with Dunagan that the growth of UNIX and UNIX-based workstations will make Portable NetWare a viable alternative for networks. "UNIX is growing as an operating system and, of course, Novell is the leader in the PC LANs. Finding a way to tie those two things together will add value to those networks," he believes.

Who's On The Portable NetWare Bandwagon

The following companies have announced their intention to release Portable NetWare versions. Those with a check mark were shipping Portable NetWare as of January 1991.

✓**Altos Computer Systems**
San Jose
Circle No. 350

✓**Data General Corp.**
Westborough, Mass.
Circle No. 351

Hewlett-Packard Co.
Palo Alto
Circle No. 352

ICL Inc.
Irvine, Calif.
Circle No. 353

Interactive Systems Corp.
Santa Monica, Calif.
Circle No. 354

Intergraph Corp.
Huntsville, Ala.
Circle No. 355

Mips Computer Systems Inc.
Sunnyvale, Calif.
Circle No. 356

✓**NCR Corp.**
Dayton, Ohio
Circle No. 357

✓**Prime Computer Inc.**
Natick, Mass.
Circle No. 358

Pyramid Technology Corp.
Mountain View, Calif.
Circle No. 359

Unisys Corp.
Blue Bell, Pa.
Circle No. 360

Wang Laboratories Inc.
Lowell, Mass.
Circle No. 361

Source: DATAMATION, company reports. Circle Numbers appear on Reader Card.

Evans & Sutherland's experience with NetWare for their VAX minicomputers convinced them that Portable NetWare would be a viable concept. Although they are different at the code level, NetWare for VMS is similar to Portable NetWare in that it allows desktop machines on NetWare LANs to access minicomputer files—in this case VAX VMS files. (Ultimately, NetWare for VMS will be rewritten to be very similar to Portable NetWare.) "We've been using NetWare for VMS for some time and, though it's slow, it's proved itself a stable operating system," Bozich.

But VAX-based applications weren't the only ones that Evans & Sutherland wanted to link with Novell NetWare groups located throughout the company. Bozich explains: "We had engineers that were trying to share data files, and there are some administrative groups that need access to manufacturing data. There are a lot of different places where the need for information might exist in our company, and we've tried other methods to link these groups together. But they haven't worked as well."

One method the company tried was to use a of variety TCP/IP software, which solved the basic connectivity problem. That gave users "terminal emulation and file transfer capabilities, which met our needs to some degree," says Bozich. "But what we really needed was for Macintosh users to log onto a UNIX machine and see that as a peer, to see folders as a Mac user sees folders. For PC users, we want to let them map a drive out to their UNIX machine, see files there and be able to use DOS copy commands or Windows 3.0 file manager or whatever tools they're comfortable with and move the files back and forth," Bozich says.

Portable NetWare, in conjunction with Novell's shells for DOS and Macs, does provide users with native file formats. And PC applications that import files from other applications can bring in binary UNIX files transparently. But Bozich has found one significant weakness in the Portable NetWare approach: its handling of UNIX text files.

Although binary files are no problem, text files are saved differently by DOS, UNIX and the Macintosh operating system. Some of Evans & Sutherland's minicomputer applications store data in text

> ☐ **I UNDERSTAND THAT IT'S GOING TO BE FASTER IN THE ACTUAL PRODUCTION RELEASE.**

files, which cannot be properly read by DOS and Mac users. File utilities are readily available to convert text files, but Bozich says, they add a step that shouldn't really be part of the file transfer process.

Bozich has not had serious problems with Portable NetWare's lack of speed. "It's not fast. The benchmarks we ran put it somewhere between NetWare For VMS, which is slow, and NetWare 286. So it's not blazing fast, but it's acceptable, and I understand that it's going to be faster in the actual production release. Its value is more in the connectivity than in the actual file and print server aspects, which is more like a rehash of what you get with 286 NetWare."

For Evans & Sutherland, and possibly for other IS organizations, Bozich points out, "The connectivity is the thing that we bought it for, not its speed."

Sony's NEWS 3250 laptop offers UNIX users what the DOS world has had for years—a portable workstation. But business users may not be ready for it.

Sony's UNIX To Go

ATHOL FODEN, product manager at Sony, hopes business and technical users will hit the road with the NEWS 3250 laptop.

BY MIKE RICCIUTI

UNIX workstation users no longer need be envious of DOS users' high-powered portable computers. Sony Microsystems Co., based in San Jose, has introduced what it claims is a first: a reduced instruction set computing (RISC) portable running the UNIX operating system.

The NEWS 3250 expands Sony's Network Engineering Workstation family of UNIX-based workstations and servers. Weighing in at close to 18 pounds, the machine is roughly the size of typical high-end DOS laptops. At around $10,000, it's also in the high-end DOS portable price ballpark.

Continued on next page.

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Peripherals
Have Mouse, Will Travel

Software
Track Your Software Changes

Networks
Bridging The Route

PCs & Workstations
Cicero Meets Excel

Systems
DEC Adds Low-End VAX 4000

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DATAMATION'S PRODUCT GUIDE

Unlike most DOS portables, the 3250 is designed around a Mips Computer Systems Inc. 20-megahertz R3000 RISC processor capable of 17 million instructions per second performance. It also includes an R3010 coprocessor for number crunching at 1.8 million floating point operations per second.

All that power must be kept on a leash, however. The 3250 has no battery—it must be plugged in.

The company is targeting the laptop at technical users, such as engineers and software developers, as well as at sales and marketing personnel looking for a portable UNIX machine for customer demonstrations. Sony is also hopeful that business users will pick up on the idea of portable UNIX for accounting and desktop publishing, says Sony product manager Athol Foden.

If the company's marketing aim is correct, a UNIX laptop will make even more sense to IS personnel in the coming years, as UNIX permeates the business market.

For computer-aided design (CAD) work, Sony has included an 11-inch monochrome LCD screen with a resolution of 1,120 × 780 pixels. Buyers have a choice of a 240- or 406-megabyte hard disk, for a total system price of $9,900 and $11,900, respectively. The 3250 come standard with 8MB of internal memory, expandable to 32MB; a 3½-inch, 1.44MB floppy disk drive; a small computer system interface (SCSI) port; one parallel and one serial port; and a single expansion slot. The laptop also has a built-in Ethernet port.

Like Sony's other NEWS workstations, the 3250 includes audio input and output capabilities, making the 3250 suitable for business presentations. The machine is shipped with a full version of UNIX System V release 4, X Windows and Open Software Foundation's Motif, as well as Network File System (NFS) software.

Although the 3250 breaks some of the barriers of UNIX computing, market analysts cite the machine's lack of battery power, its weight and its high price as serious drawbacks. Sony says future versions may include battery power, but that would entail a design change, as the R3000 processor is not designed to be battery run. Still, analysts generally agree that Sony has hit the technical market with the right product at the right time.

DATAMATION March 15, 1991

IN FOCUS

Sony NEWS 3250 Laptop

Sony Microsystems Co.
San Jose
Price: $9,900
Circle No. 500 on Reader Card

Product Features

- 20MHz RISC processor
- UNIX SVR4 operating system
- High-resolution display
- X Windows, Motif included
- Sound input/output capabilities

Key Benefits For IS

- Portable UNIX workstation
- Network capability built in
- Large storage capacity

Drawbacks

- Weighs 18 lbs.
- No battery power

Source: Company reports, DATAMATION

Too Much Of A Good Thing?

"Nobody has yet attempted to hit UNIX users with a wide-scale commercial product like this," says Brian Jeffery, a market analyst with International Technology Group in Los Altos, Calif. "The power and disk storage are more than adequate for a portable machine. It has the potential to be a big seller in the future. But it may be too much of a high-end product for business apps right now—not the right combination of price and performance."

Jeffery says initial buyers may be users with high-end applications, such as structural analysis and mobile image processing, as well business users of desktop publishing. By far the largest body of initial users will be independent software vendors (ISVs), who will be porting applications to the laptop.

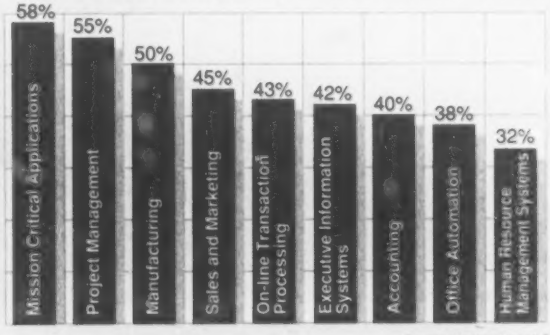
Beta user ISVs confirm that the 3250 has all the horsepower needed to run typical UNIX applications. Many, such as CADshare, a Charlotte N.C.-based publisher of CAD software, have already ported applications to Sony's desktop workstations. CADshare president Paul Pazzaglini says his developers like the laptop's power but want a higher resolution screen and battery power.

Another beta user, Cameron Jenkins of AccuCobol in San Diego, says the performance of the 3250's RISC processor packed into a portable should make it a big seller with technical users and that battery power is not an issue. "Our customers—hardcore UNIX programmers—are not used to battery-powered computers. The idea of a laptop is novel enough to them."

Business Users Check Out UNIX

Sony's UNIX laptop may not find a home in business applications right away, but 84% of 129 businesses surveyed said they are now using UNIX for at least one business application.

PERCENT OF USERS RUNNING EACH APPLICATION ON UNIX:



Source: International Data Corp.

MARKET INSIGHTS

AN ANALYSIS OF ECONOMIC TRENDS

No Failure To Communicate

BY MADELINE FRANCHI
Cahners Economics

The DATAMATION Information Systems Performance Indicator (ISPI) slipped almost a point and a half to 97.39 in October from September's figure of 98.80, pretty much as expected. Relative to October 1989, the ISPI fell 6.8 points. Although new orders for IS equipment dropped slightly in October, they were still 13% higher than they were in October of 1989. This surprising strength, especially during the aftermath of the Iraqi invasion of Kuwait, kept the indicator from falling even more sharply.

But the big surprise was the strong increase in orders for commercial communications equipment, which really saved the indicator from a far more serious decline. IS managers may be holding back on some computer hardware purchases, but they seem to be more willing to part with dollars for networks and multiplexers.

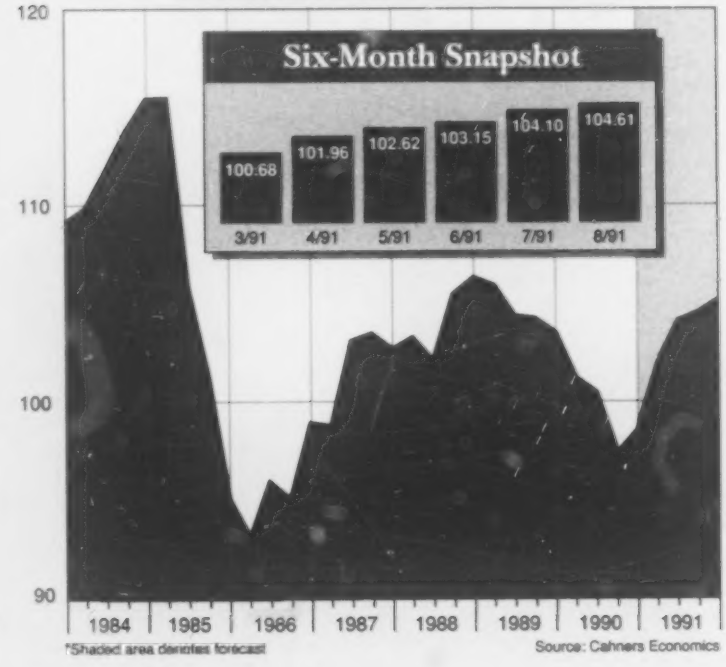
The weakest component in the indicator, however, continues to be the computer systems stock price index, the element most influenced by confidence levels and expectations. Between October 1989 and October 1990, the Standard and Poor's computer stock price index plunged 14.5% amid reports that profits were falling below investor expectations. According to Harvey L. Poppel, a partner at the Fort Lee, N.J.- based investment firm, Broadview Associates: "The massacre in IS stocks has occurred despite a cumulative annual revenue growth of nearly 14% over the past 12 months."

Which is why we continue to forecast a relatively short, mild recession for IS. Once the stock market rises to reflect those earnings, which should happen soon, the ISPI will rise past the 100 mark—perhaps as soon as the end of this month.

For more information on Cahners Economics's forecasting services, including seminars, newsletters and database diskettes, call Dan Buchan at (617)-630-2105, fax him at (617)-630-2100 or write to him at Cahners Economics, 275 Washington St., Newton, MA 02158.

The IS Performance Indicator

Is it the darkness before the dawn that gives that bleak look to the IS indicator this month?



*Shaded area denotes forecast

Source: Cahners Economics

	Oct. 1990	Sept. 1990	% Change 9/90-10/90	Oct. 1989	% Change 1989/1990
Information-Processing Equipment					
Shipments (SA, $ billions)	10.52	10.07	4.4	9.20	14.3
New Orders (SA, $ billions)	10.38	10.46	-0.7	9.18	13.1
Unfilled Orders (SA, $ billions)	29.05	29.18	-0.4	28.42	2.2
Inventory (SA, $ billions)	21.03	21.29	-1.2	22.23	-5.4
Computer Production Workers					
Employment (NSA, thousands)	271.4	272.9	-0.5	289.8	-6.3
Average Weekly Hours (monthly avg.)	41.6	42.0	-1.0	41.9	-0.7
Stock Index					
S&P's Computer Systems Stock Price Index	154.36	162.67	-5.1	180.54	-14.5
Contracts & Orders					
New Plant & Equipment (SA, $ billions)	45.2	42.13	7.3	41.79	8.2

SA= seasonally adjusted;
NSA= not seasonally adjusted

Sources: U.S. Commerce Dept. and Standard & Poor's; forecasts: Cahners Economics

MARKET INSIGHTS

A SURVEY OF TECHNOLOGY TRENDS

Laptops Are On The Move

BY WARREN CHILDS
Business Research Group

On the plane, in the train, upstairs, downstairs—laptop computers are popping up wherever you look these days. And no wonder—as shown by the latest survey of DATAMATION's Technology Panel, America's businesses are virtually pushing these portable computers into employees' hands in hopes of increasing their opportunity to do work. A whopping 90% of the survey's respondents say some employees at their locations are using portable or laptop computers.

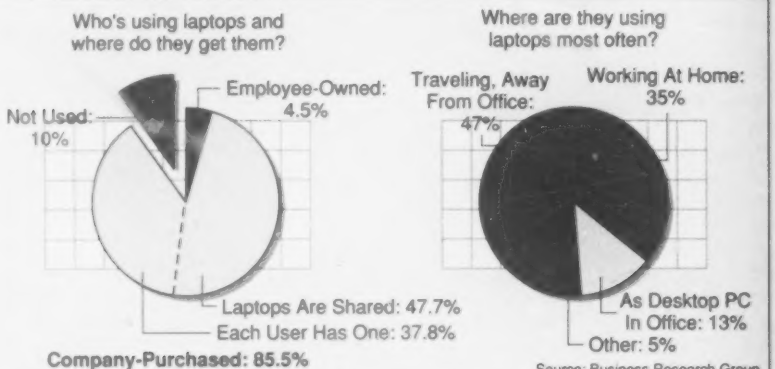
Thirty-eight percent of survey respondents say their companies are purchasing laptops outright for those employees. Another 48% say their companies make laptops available on an as-needed, temporary basis. Employees must sign them out for specific uses, then return them.

The biggest users of laptops are salespeople, field service staff and others who frequently travel or work at home. Panel members estimate that 47% of the time, laptops are being used during business hours by employees while they are away from the office; 35% of the time, employees are taking them home to work; and 13% of the time, they are using them in the office.

Portable computers are the fastest growing segment of the computer industry right now. Portables and laptops are for the most part no longer heavy luggables—although a resilient market for the versatile luggables still exists among personnel servicing computer-related machinery. Indeed, most laptops are now pint-sized systems that can easily fit into a briefcase, and some can fit into a pocket (albeit a wide one). The street price for these little wonders—say a 16-megahertz 80286-based portable with VGA display, 20-megabyte hard drive and built-in modem—is down to $2,000 or less. □

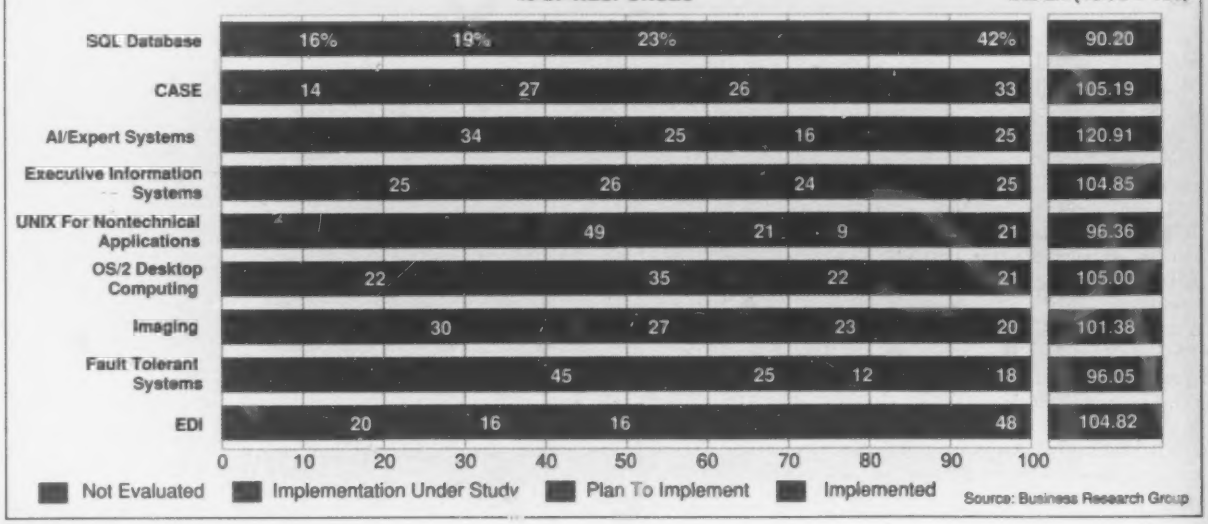
For more information, call Nancy Finn at (617)-964-6204, fax her at (617)-558-4402 or write to her at the Business Research Group, 275 Washington Street, Newton, MA 02158.

Who Would Ever Use A Laptop?


Who's using laptops and where do they get them?
Not Used: 10%
Employee-Owned: 4.5%
Laptops Are Shared: 47.7%
Each User Has One: 37.8%
Company-Purchased: 85.5%
Where are they using laptops most often?
Traveling, Away From Office: 47%
Working At Home: 35%
As Desktop PC In Office: 13%
Other: 5%
Source: Business Research Group

DATAMATION's Technology Implementation Index: Systems And Software

DATAMATION each month surveys a select group of its readers– the DATAMATION Technology Panel–to investigate the implementation of new technologies by key end-user organizations.


% OF RESPONSES
INDEX (10/90 = 100)
SQL Database 16% 19% 23% 42% 90.20
CASE 14 27 26 33 105.19
AI/Expert Systems 34 25 16 25 120.91
Executive Information Systems 25 26 24 25 104.85
UNIX For Nontechnical Applications 49 21 9 21 96.36
OS/2 Desktop Computing 22 35 22 21 105.00
Imaging 30 27 23 20 101.38
Fault Tolerant Systems 45 25 12 18 96.05
EDI 20 16 16 48 104.82
0 10 20 30 40 50 60 70 80 90 100
Not Evaluated
Implementation Under Study
Plan To Implement
Implemented
Source: Business Research Group

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This index lists vendors, user groups and industry associations mentioned in this issue of DATAMATION, excluding those mentioned only in passing. Page numbers refer to the first page of articles.

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